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Clinical Section

*HIATUS HERNIA

By

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This is a hernia through the oesophageal opening, or Hiatus, of the diaphragm; a small part of the fundus of the stomach pushes through the hiatus into the posterior mediastinum; there is a hernial sac composed of the diaphragmatic peritoneum, which may be fused with the serous coat of the adjacent stomach; the sac gradually enlarges and pushes out behind the mediastinal pleura into the posterior mediastinum, by the side of the oesophagus, exerting pressure on the heart. The hernia may be permanently fixed in the thorax but more often is intermittent, sliding out when the tension in the abdomen is heightened, as when the patient bends forward, or is lying on his back, or sometimes after meals.

Previously described by Friedenwald and Feldman many years ago, hiatus hernia has been brought into prominence recently by Von Bergmann, who claims that it is exceedingly common, though generally overlooked. Indeed, Knothe, in Von Bergmann's clinic, was able to demonstrate this hernia in 300 patients in one year, and other German roentgenologists, using special technique, also gave high figures. Doubt has been thrown on these figures obtained mainly by x-ray examinations, confirmed as they were by few operative or post mortem findings. But in the United States, quite independently, Chevalier Jackson has found hiatus hernia "a rather common condition in our records," while Harrington, of the Mayo Clinic, has recently given details of 43 hiatus hernias operated on at Rochester and has systematically examined in 500 other abdominal operations the oesophageal opening of the diaphragm; in these 500 cases, he found in 65% the diaphragm closed snugly around the oesophagus, with no appreciable space between; in 35%, at least one finger could be placed between the oesophagus and the margin of the diaphragmatic opening, in 14% two fingers, and, in exceptional cases, three fingers could be inserted in the space between. Harrington notes that in these latter cases, special x-ray examinations made later showed occasionally a small hernia present. Looking specially for this type of hernia in the last two years, Dr. McMillan, of Winnipeg, has demonstrated its presence in a number of cases; Hurst of London thinks Von Bergmann has greatly exaggerated its frequency but has himself given details of a few convincing cases. Hedblom finds the lower end of the oesophagus has generally

prolapsed with a portion of the cardiac end of the stomach into the thorax, while all observers admit that there is a condition of congenital shortness of the oesophagus in which a portion of the fundus of the stomach lies above the diaphragm, with the oesophagus entering it at its highest point.

(It should be noted that no account is being taken here of traumatic diaphragmatic hernia due either to direct injury to the diaphragm, as in gunshot wounds, or to indirect injury, as in a severe crushing accident.)

Etiology: In hiatus hernia, a congenital embryological deficiency may be present, but generally there seems to be a natural weakness of the oesophageal ring; the increasing laxity of these tissues, with advancing years, accounts for its relative frequency in elderly people, while in younger subjects, the hernia particularly follows operations where severe vomiting has occurred during or after the anesthetic, or where increased intra-abdominal pressure occurs, as in pregnancy or in violent physical strain. There is, according to Von Bergmann, a natural play of the oesophagus through the hiatus of one or two centimetres.

The two vagi pass through the oesophageal opening; experimentally, in animals, a small bag placed in the hiatus and distended with air will press on the vagi and cause reflexly a reduction in the coronary circulation by more than one-half, without the general circulation or blood pressure being affected. This probably accounts in part for the anginal symptoms sometimes found in association with hiatus hernia.

Symptoms: Most cases of hiatus hernia, shown by x-ray, and a few demonstrated by Harrington in the course of other abdominal operations, have given rise to no symptoms; even when present, the symptoms are usually slight, though exceptionally quite severe, when progressive incarceration of the stomach produces signs of obstruction or when serious reflex symptoms like angina pectoris occur.

In mild cases, a feeling of pressure or of pain immediately behind the lower sternum or xiphoid comes in attacks, during or immediately after a heavy meal, or sometimes on bending forward as in lacing the boots, or even while lying down. There may be a definite hint of difficulty in swallowing or a sense of choking, with difficulty in getting a full breath; acid eructations are common. The spell may be relieved by standing, stretching, or sometimes by drinking a little aerated water or taking a little baking soda; belching of gas or vomiting may relieve, suggesting cholecystitis. Exceptionally, the pain may be severe, may radiate to the left chest and into the left arm, simulating angina pectoris; the hernial sac may become inflamed or even ulcerated, as Chevalier Jackson has frequently found in oesophagoscopic examination, with resulting

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haematemesis or blood in the stool. Weeks or months may pass between attacks, the stomach not engaging in the oesophageal ring, but when the fundus has become fixed in the chest by adhesions, the pain, gas and vomiting may be prolonged and dangerous. Bock, Dulin and Brooke have recently described 15 patients who suffered from repeated attacks of anaemia of obscure origin which were associated with hiatus hernia; there was no history or x-ray evidence of ulcer, but three of the patients operated on and two examined post mortem revealed marked venous congestion of the herniated stomach without definite ulceration. Small and frequent meals may apparently relieve some—with the resultant diagnosis of ulcer.

Diagnosis: Other oesophageal disorders must be distinguished—the dysphagia of middle-aged anaemic women, the so-called cardiospasm, peptic ulcer and peptic oesophagitis and especially carcinoma of the lower end of the oesophagus.

The dysphagia of middle-aged anaemic women (the Plummer-Vinson Syndrome) is referred high up to the entrance of the oesophagus instead of to the lower end; it is associated with marked secondary anaemia, with atrophic changes of the mucous membrane of the tongue, mouth and pharynx, and often with splenic enlargement. 30-grain doses of iron & ammonium citrate, three times a day, cures the anaemia, while the difficulty of swallowing is rapidly relieved by oesophageal bougies, or sounds, guided, if necessary, by a previously swallowed silk thread.

Cardiospasm is not liable to be confused if a satisfactory x-ray plate be taken, showing the diffuse dilatation of the oesophagus and the smooth cigar-shaped termination at the hiatus.

In peptic ulcer of the oesophagus, discomfort or pain may come behind the lower end of the sternum and through to the back, during the swallowing of solid food, though, Chevalier Jackson found, generally not for half an hour or longer after food; alkalies may give prompt relief. The x-ray examination is often negative and diagnosis may be impossible without the oesophagoscope, but in any case, the negative x-ray findings will exclude a definite diagnosis of hiatus hernia.

Recently peptic oesophagitis has been differentiated, especially by Winkelstein and Chevalier Jackson, with symptoms similar to those of oesophageal ulcer—irregular spasm of the lower end of the oesophagus may be present on x-ray examination, without dilatation above. The condition improves with antacid and ulcer treatment, and this may, in doubtful cases, confirm the diagnosis. Carcinoma of the lower end of the oesophagus must be constantly remembered in differential diagnosis but will not be taken up here.

With the suspicion of hiatus hernia aroused, a special x-ray technique should be followed. The hernia may disappear with the subject erect, so that the thickened barium should be drunk in the lying down position; others recommend

further, when the patient is on his back, pressing the upper epigastrium firmly upwards and backwards so as to fill the fundus of the stomach and squeeze some of the barium into the hernia. The folds of the mucous lining of the stomach are comparatively thick and irregular, readily distinguishable from the thin, fine parallel folds of the oesophagus—a point of value in examining the x-ray plate. Of course, an expert with oesophagoscope or gastroscope may settle a doubtful diagnosis, but he is seldom available.

It is obvious that hiatus hernia should be considered when the symptoms present are rather atypical of ulcer or cholecystitis; also, when at operation, the expected lesion is not demonstrable, the hiatus ring should be carefully investigated for a possible hernia.

Treatment: In the usual case with mild symptoms, the definite reassurance possible as to the comparatively minor disability, with relief from fear of angina pectoris or carcinoma may help greatly, as Von Bergmann has emphasized. Standing, stretching, or some special manoeuvre may give relief instantly, the hernia slipping down into the abdomen; in other cases, air swallowing or a mouthful of aerated water may have the same effect by filling the fundus of the stomach. Anything likely to increase the intra-abdominal pressure should be avoided; Hurst records a patient in which attacks after breakfast could be prevented by putting on his boots only when the feet were raised to the level of his buttocks, and other spells could be avoided by sitting on a very low seat when writing, with the upright position thus maintained. As both Hedblom and Harrington point out, operation should be reserved for the exceptional cases when the hernia is large and produces rather marked symptoms; in these cases, satisfactory closure of the hiatus may be difficult even with a preliminary phrenicotomy.

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Chronic Pulmonary Sepsis Clinical Diagnosis and Pathogenesis

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To discuss the clinical diagnosis and pathogenesis of pulmonary sepsis means in effect to define

what the condition is and explain how it arises

A. What is chronic pulmonary sepsis?

This expression "chronic pulmonary sepsis" is quite a new one in Medical parlance. Its meaning is still not precisely defined and there are a variety of opinions as to its exact implication. Perhaps the commonest definition would be "a group of conditions including chronic bronchitis, chronic lung abscess, endo-bronchial suppuration, bronchiectasis, septic pneumonia, and gangrene. There are very definite objections to such a conception. The chief of these are:—

1. No one can get a clear picture of what is meant by "chronic bronchitis". In practice it has been used to include a great variety of obscure clinical conditions. Pathological conceptions are useless because uncomplicated chronic bronchitis does not cause death, and the pathologists' idea of it is a pure abstraction which is of no clinical value.

2. The differentiation of so called "chronic bronchitis" from bronchiectasis is very largely fortuitous. It depends, in effect, on demonstrating bronchial dilatation or saccululation by the use of lipiodol. Still, we must admit that the presence of saccululation does not necessarily mean sepsis any more than the presence of an appendix means appendicitis or the presence of a diverticulum means diverticulitis. Furthermore, the failure to demonstrate an abnormal bronchial tree by lipiodol does not infallibly indicate that the tree is normal. Lipiodol will naturally tend to be aspirated into the elastic part of the lung and fail to go into the part that is diseased, especially when it is filled with pus.

3. The chief objection to thinking of pulmonary sepsis as a group of separate entities is that this classification does not cover the ground. There are many cases of pulmonary sepsis which cannot be included under any of the three headings, because they present none of the recognised physical or x-ray signs.

4. This conception gives far too much prominence to the *relatively* few cases of abscess and bronchiectasis which are essentially incurable and not enough to the very common and highly curable minor cases.

It seems to me that it would be in the interest of prophylaxis and early treatment if we were to give less thought to differentiation and partition and more to co-ordination and fusion of all the groups. The fashion in modern medicine is largely in favour of minute analysis and differentiation. Such an exercise no doubt is conducive to exhaustive study and detailed examination of individual cases; it is inclined however, to obscure broader underlying principles and to lose sight of common otiological factors. To practice synthesis rather than analysis puts a subject on a broader and more comprehensive base and indirectly simplifies and improves treatment.

If we apply this co-ordinating or synthetising plan to chronic pulmonary sepsis the following

definition emerges: "Any condition in which purulent material is habitually produced from any part of the respiratory tract." This definition is very broad; it includes cases of tuberculosis in which purulent material is expectorated. It is only reasonable that it should include these. Sepsis indeed is a major factor in all tuberculous lesions that have come into communication with the bronchial tree. It is becoming more and more obvious that the ravages of pulmonary tuberculosis are largely due to secondary infection and that the principles of treating sepsis must also be applied to pulmonary tuberculosis. The same facts apply to a lesser degree in pulmonary neoplasms. Most of these cases terminate as septic cases and die from it rather than from spread of the growth.

The definition also designedly includes all those cases which appear to have only upper respiratory infection. This is done because of the firm conviction that no upper respiratory sepsis can exist without pulmonary contamination.

To consider chronic pulmonary sepsis from this broad point of view has definite clinical and practical advantages. Practically it is only necessary to demonstrate that purulent material is habitually or intermittently coming from the respiratory tract to establish a diagnosis of sepsis. Having shown this, the well known methods used in treatment must be applied in every case—no matter what the contributory circumstances may chance to be. The principles of treatment arise out of the consideration of pathogenesis, and this brings us to the second part of the problem.

B. How does sepsis occur?

There are two main causes for sepsis in the lung as there are for sepsis in any other hollow organ. They are:—

1. Abnormal contamination.
2. Defective drainage.

Every case results from one or other of these causes or from a combination of them. Let us consider pulmonary contamination and pulmonary drainage.

Pulmonary Contamination

Till recently it was usually thought that the bronchial tree was effectively protected against contamination from above. The larynx was regarded as a sensitive and irritable watch dog which stood on perpetual guard. It was thought that only in conditions of deep narcosis, anaesthesia or intoxication when the larynx was insensitive could septic material be aspirated. Experience with lipiodol has dissipated all this. Lipiodol is freely aspirated from the mouth of normal individuals who are wide-awake and in whom no sedative or local anaesthetic has been used. It is only necessary to hold the tongue out in order to prevent swallowing and to be sure that the temperature of the lipiodol is approximately that of the body. In the same way any similar material will get past the larynx and into the remotest reaches of the bronchial tree. It must only be

warm, smooth and non-irritating to mucus membrane. These are precisely the qualities of upper respiratory secretions. Thus there cannot be the slightest doubt that all upper respiratory secretion has a tendency to be aspirated even during waking hours. This tendency is much increased during sleep and still further increased during anaesthesia, and particularly during operation in the upper respiratory tract where the head is thrown back, the tongue is held out and breathing deep. The chance of pulmonary contamination is still further increased by the fact that purulent material is being stirred up. In consideration of these facts it seems remarkable that gross pulmonary sepsis is not more common than it is. If contamination takes place so readily and so universally why is it that gross sepsis is not more common? It would indeed be, except for the natural defense of the bronchial tree, which simply means drainage. This brings us to a consideration of the second main factor—drainage.

Pulmonary Drainage

Every hollow viscus is subject to contamination and each one requires a method of disposing of infection. We all realise what happens when an appendix, a gall bladder or a kidney pelvis fails to drain adequately. From the bronchial tree active drainage is particularly necessary for the following reasons:—

1. It is contiguous to the mouth, which is bacteriologically the foulest cavity of the human body.

2. Gravity and negative pressure in the lungs favour drainage down the bronchial tree.

3. The bronchial tree is among the most tortuous and complex system of hollow tubes in the body. Its devious course twists and turns in the most bizarre fashion and favours stagnation and trapping.

Very active and efficient forces of drainage must exist to counteract these adverse circumstances. These drainage forces may be enumerated as follows:—

1. Normal respiration tends to move secretions toward the larger tubes. With inspiration the tubes are pulled out and attenuated; on expiration they become relatively short and broad. This produces a sort of pumping action.

2. Gravity. This, as a rule, effectually protects the upper lob against infection.

3. Ciliary activity. By the action of cilia any material in the bronchial tree is wafted towards the larger tubes.

4. The cough reflex. This comes into play in the larger and more sensitive tubes. Foreign material in the alveolar part of the lung usually produces no cough; when such material is propelled by ciliary activity to the larger tubes, cough is induced. Chevalier Jackson has divided the effect of cough into two components—(1) The tussive squeeze by which the peripheral parts of the lung are forcibly compressed by the violent

expiratory effort of the cough and, (2) the "beeie blast" of air that is forced through the larger tubes. These two forces tend to bring foreign material from the periphery to the trachea, and finally into the mouth.

5. Peristalsis. The presence of peristalsis in the bronchial tree has never been conclusively shown. Since the tract throughout most of its course is well supplied with muscle fibres it is highly probable that such activity does exist.

These five forces: respiration, gravity, ciliary activity, the cough reflex and peristalsis combine to keep the bronchial tree from infection. If they are not hampered and if contamination is not over-whelming, they are successful. Sepsis results when contamination is excessive or when drainage is interfered with.

The Relative Significance of Contamination and Defective Drainage.

The question as to which of these factors is most important in the production of sepsis is frequently discussed. Some say that purulent seepage into a normal lung will alone bring about all grades of sepsis. Others write that other factors must come into play. To settle such an argument beyond doubt is not possible. However, it seems only reasonable to suppose that even a normal bronchial tree will become inflamed if subjected to contamination over a long period of time.

Such a supposition is borne out by clinical experience; for we often see cases of gross sepsis in which no explanation except upper respiratory infection can be found. Also, we see such cases recover when upper respiratory tract has had adequate treatment. The point at which the bronchial tree actually becomes inflamed and not merely contaminated cannot even be guessed at. In any event it is purely an academic question because the treatment is the same at all stages.

The question as to whether defective drainage alone can cause sepsis must also be answered in the affirmative. Even with a normal upper respiratory tract no lung can be regarded as sterile. If the tendency to trapping or damming back is marked, infection of the stagnant material is only a matter of time.

The inter-relation of these two factors is further complicated by the fact that primary lung sepsis may produce secondary infection of the upper respiratory tract. Whether this occurs by the blood stream, by the lymphatics, or by continuity of mucous membrane is of no practical importance. It simply emphasises again that anatomical differentiation is largely futile and not important from a practical point of view.

Clinical Causes of Defective Drainage.

The clinical circumstances which contribute to defective drainage will now be considered. These all act by interfering with the natural forces which tend to drain the lung. These fall into several groups:

1. The first group are those that reduce respiratory movement, either locally or generally. This accounts for prevalence of pulmonary sepsis in the aged and in asthmatics. In these, loss of elasticity and emphysema impair the pumping function of the lung, and so called "diffuse bronchitis" is common. Local impairment of lung movement, after-pleurisy, empyema, and pneumonia, will also predispose to sepsis. This applies particularly when the diaphragm is firmly fixed.

2. Conditions which cause distortion of the bronchial tree are by far the commonest cause of pulmonary sepsis. This almost always occurs as the result of previous inflammation. Thus the most frequent antecedent history of cases of well established sepsis—such as bronchiectasis—is that of broncho-pneumonia, usually following whooping cough and measles. Such a broncho-pneumonia frequently leaves some fibrosis; this fibroid tissue in time contracts and pulls, the bronchial tree is thus distorted and pinched and stagnation occurs. As a result the signs and symptoms of continuous or intermittent sepsis supervene.

Tuberculosis also produces such gnarling of the bronchial tree. So called cases of chronic fibroid phthisis present a picture rather of sepsis than of tuberculosis. These septic manifestations often persist for years after tubercle bacilli have disappeared.

It is possible also that prolonged contamination from the upper respiratory tract may produce peribronchial fibrosis and distortion.

3. The third group of conditions which may cause sepsis by stopping drainage is congenital anomalies. Not uncommonly some part of the alveolar portion of the lung fails to develop. The bronchioles are then left as blind cul de sac which are liable to harbor infection especially if they become bulbous. For certain embryologic reasons this is more likely to occur in the left lower lobe. Sauerbruch believes that such congenital anomalies are a very common cause of bronchiectasis in this region. The cells show no pigmentation, indicating that they are embryonic and have never functioned as respiratory elements. Such cases usually cannot be differentiated clinically from other types of bronchiectasis.

4. Obstruction or atresia of a bronchus will of course interfere with drainage and favor sepsis. Foreign bodies and bronchogenic new growths are the commonest causes of obstruction. If a main bronchus is suddenly and completely occluded the whole lobe may become atelectatic and no sepsis may occur. If it is only partly or intermittently plugged stagnation and infection is more likely. If a secondary or lobular bronchus is stopped, sepsis may or may not supervene. The lung tissue which is tributary to such a secondary bronchus may be adequately aerated and drained by collateral air vents. These have been shown to provide intercommunication between alveoli throughout each lobe. These vents or fenestre prevent complete isolation of any part of the lung except when obstruction involves a bronchus. In

spite of this the obstruction of even a minor bronchus is liable to cause enough embarrassment of normal drainage to favor sepsis. Thus we frequently see bronchiectasis, abscess, septic pneumonia and gangrene arising distal to a new growth or a foreign body.

Tuberculosis is more and more being recognized as a source of bronchial-stenosis. Tuberculous bronchial ulcers are not uncommon; when chronic they cause fibrosis and varying degrees of narrowing. The lung distal to them may become atelectic or septic. Such tuberculosis strictures have been discovered both by lipiodol and by bronchoscope and will in future have a definite influence on the treatment of tuberculosis.

There are two other factors in the pathogenesis of pulmonary sepsis which have been deliberately left out. These are (1) circulatory changes, and (2) embolic infection of the lung. They have been left out of the discussion because it is almost impossible to assess their importance. No doubt defective circulation resulting from general cardio-vascular weakness or from local pressure on arterial channels must have definite influence in the production of sepsis. It is impossible to determine exactly when and how it comes into play. In any event, its contribution is not common and must influence treatment, but rarely. The other factor—embolic infection of the lung—unquestionably plays a part in the production of some abscesses. Lung abscesses arising in the course of septicaemia and pyaemia are not uncommon. They are always multiple and must unquestionably be regarded as blood born. These multiple abscesses are a part of general sepsis and do not come into the picture of respiratory sepsis as a clinical entity. There are many, however, who believe that solitary lung abscesses, which as a rule follow operations on the upper respiratory tract are embolic in origin. Chevalier Jackson is one champion of this theory. Much could be said for and against his ideas. Certainly the consensus of opinion is against him. In any event, though he insists that aspiration and defective drainage are not the cause of these abscesses, he also insists that the provision of adequate drainage is the only method of cure. So whether we accept the embolic theory or the more plausible aspiration theory, the treatment is just the same.

The Board of Trustees of The Winnipeg General Hospital invites applications up until noon, Friday, January 24th, 1936, for the following positions on the Honorary Attending Staff:—

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Editorial and Special Articles

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Executive Meeting

Minutes of a Special Meeting of the Winnipeg Members of the Executive of the Manitoba Medical Association, held in the Medical Arts Club Rooms on Wednesday, December 4th, 1935, at 1.00 p.m.

Present:

Dr. F. G. McGuinness, Chairman
Dr. E. S. Moorhead
Dr. A. S. Kobrinsky
Dr. F. A. Benner
Dr. Ross Mitchell
Dr. W. E. Campbell
Dr. F. D. McKenty
Dr. C. W. MacCharles

This meeting was called for the purpose of considering a telegram received from Dr. T. C. Routley, Secretary of the Canadian Medical Association, re. a proposed Royal Commission suggested by a conference of Health Officers held last August. Dr. Routley's telegram reads as follows:

"Supplement September Journal Page thirty second column resolution number two beginning 'Whereas it has been brought.' Strongly recommend this be brought to attention your Government representative attending Ottawa Conference beginning December 9th. United action medical profession across Canada needed at this time. Please advise me by wire action taken. Expect to be in Ottawa next week would be glad to receive before that any information or suggestions which might be used helpfully."

It was felt that in view of the Provincial, Dominion conference shortly to be held that the views of the various Associations should be conveyed to the Provin-

cial representative before leaving for Ottawa. It was also felt that insofar as many world-wide Royal Commissions had already been appointed, none had sufficient statistics to deal with, therefore the appointment of a Royal Commission would not serve any particularly useful purpose at this time. It was felt as well that the only thing it could deal with was inter-provincial relationships, research and health insurance.

Dr. Moorhead and the President were instructed to interview The Honourable Minister of Health and Public Welfare, and convey our ideas to him. The Secretary was instructed to wire the Canadian Medical Association to this effect; copy of telegram sent to Dr. Routley was as follows:

"Representatives from Executive Meeting of Manitoba Medical Association interviewed Minister of Health who will convey motion to Attorney General as follows: that activities of commission if appointed be restricted to co-ordination of Provinces with regard to research and public health owing to lack of statistics required for actuarial survey of conditions in Canada. Recommend that before commission investigate health insurance information by trial methods must be obtained."

The meeting adjourned.

Revised Surgical Fees

Revised schedule of fees for surgical operations in relief cases, effective from December 5th, 1935, and accepted by the City of Winnipeg only.

Total Respiratory Dis.:

Empyema	\$ 15.00
Bronchoscopy	15.00

Eye, Ear, Nose and Throat:

Antrum or Sinus (Radical)	35.00
Otitis Media	(in office) 2.50
" "	(in house and hospital) 5.00
Mastoid	35.00
Eye Operations †	
Tonsillectomy	10.00

General Diseases:

Diabetic Gangrene †	
Goitre	30.00
T. B. Glands and Adenitis	25.00

Circul. Sys. (Haemorrh)

Digestive System:

Gastric Ulcer	35.00
Appendicitis	25.00
Rectal Abscess, etc.	10.00
Intususception	35.00
Gall Bladder Disease	35.00
Bowel Obstruction	35.00
Hernia	25.00
Cirrhosis of Liver †	
Ruptured Liver †	

Gen-Urinary System:

Nephritic Abscess	25.00
Stone in Bladder	25.00
Urethral Caruncle	15.00
Renal Calculus	35.00
Papiloma of Bladder †	
T. B. Kidney	35.00
Prostatectomy	35.00
Punch	25.00
Hydrocele (Radical)	15.00

Female Genital Organs:

Fibroids and Other Uterine Operations	35.00
Pelvic Cellulitis	25.00
Ovarian Cyst	25.00
Salpingitis	25.00
Ectopic Pregnancy	25.00

Caesarian Section	\$ 35.00
Mastitis ‡	
Perineal Tear	25.00
General Repair Suspension	35.00
Bones and Muscles:	
Osteo-myelitis ‡	
Bone Tumor ‡	
Ruptured Muscle ‡	
Club Feet	35.00
T. B. Hip	35.00
T. B. Spine	35.00
New Growths ‡	
Hare Lip & Cl. Pal	20.00 and 35.00
Minor Injuries ‡	
Fractures ‡	
Minor Operations, Sprains, Dislocations ‡	
‡ Fees to be based on skill and time required, not to exceed \$35.00.	

Drugs, Ethics and Economics

A Drug Manufacturer's Viewpoint

By

TOM M. MATHESON

Pharmaceutical Chemist

Oppenheimer Son and Company Limited
London, England

The opinions of Professor V. E. Henderson of the University of Toronto as expressed in the *Canadian Medical Journal* for September, 1935, have created considerable interest. Professor Henderson discusses the general subject of the cost and distribution of proprietary and pharmacopoeial pharmaceutical preparations. Although Professor Henderson's article is somewhat involved, he presents a few definite opinions with which we are in most whole-hearted disagreement. He infers, for example, that were this business of manufacturing pharmaceutical products in the hands of professors, and particularly professors such as he, the result would be a greatly enhanced moral and ethical tone to the trade as well as great saving in cost to the community.

Whether Professor Henderson would have us forego the profit motive entirely, and embrace the complete socialization of medicine is not quite clear from this rather confused attack on the business methods, scientific knowledge, ethics and economics of drug manufacturers. It is certain, however, that he does not like their present methods of doing business and that he objects to profit and advertising in this particular trade at least.

One would suggest that a very good case can be made for the continuance of some of the very things which Professor Henderson indicts most vigorously. It might be a healthy thing to examine the functioning of the existing "profit-advertising" system before we discard it in favor of Professor Henderson's socialistic conclusions. From our prejudiced position we seem to detect the attitude of what Professor Zinnser refers to as the "superb mind." This is a happy condition that results from years of issuing "pronunciamientos" to humble students who dare not

question the divine authority of the gentleman upon the dais. With the impudence of the pragmatic viewpoint we here propose to question both the premises and the conclusions of Professor Henderson.

If we first consider the very important factor of the *effectiveness* of the commercial, competitive system of distributing drugs we are faced with the fact that never before in the history of the world has there been such a readily accessible supply of potent therapeutic agents when, and where the physician needed them.

The commercial firm must, to continue its existence, bow to certain inflexible rules. Discarding, for the moment, the sociological or ethical aspects of the system as voluntary phenomena, let us list some of these rules. Perhaps in this way we can better view their effect on the physician and the community;

1. Drugs must be effective and abreast of modern scientific knowledge.
2. They must be available at the local drug store in every town and village in the country.
3. They must be in convenient and painless or palatable form.
4. The cost must be relatively and progressively lower.
5. Research must be carried on continuously and aggressively.

All of these rules exist, in the first place, for pure commercial reasons. If we examine them, however, we must concede that desirable effects result to the physician and the community by their functioning. Before we hastily discard the competitive, commercial system we must be assured that some equally effective instrument replaces the profit motive. It is questionable whether the pure altruism of socialism such as Professor Henderson suggests has within it such effective weapons against charlatanism, and particularly against inefficiency and ignorance.

The commercial reasons for the first rule are too obvious to need much elaboration. Ineffective drugs pass out of existence automatically and the cost of research, advertising, detailing and selling is never recovered. Since medicine is still more art than science, and since all human knowledge has not miraculously descended upon us in this year of grace 1935, this is an ever present risk against which major pharmaceutical manufacturers guard to the best of their ability.

Thus research must be carried on to guard against marketing ineffectual—and therefore profitless—drugs. We have listed this fact again in the fifth rule because research must be carried on for a somewhat different reason—the attempt to get ahead of competitors.

The second rule, that of availability, functions both for competitive reasons and also because the practice of medicine does not usually lend itself to awaiting supplies from London or New York

or some other distant point. If your druggist hasn't got it in stock the usual rule is that the sale is lost—no sale, no profit.

A concrete example of the working of this rule is well exhibited in the *British Medical Journal* for May 4th, 1935. Here is an editorial comment: "Messrs. Burroughs Wellcome and Company have achieved a remarkable success, in that they have managed to put out a commercial issue of ergometrine within three weeks of the announcement of its isolation."

In connection with the third rule it is interesting to note that its effectiveness is always considerably modified by institutional practice. In panel practice such things as elegance, convenience, painlessness or better toleration tend to become secondary considerations at best. All of these advantages aid considerably in the commercial exploitation of products intended for the prescription of the private practitioner.

The fourth rule as to cost is the special hobby of all cracker-barrel experts. Some of the more Alice-in-Wonderland breed of expert would have us believe that the price set by the manufacturer on pharmaceuticals was a number plucked out of thin air, and modified only by the avarice or charity of the makers. This is a delightfully convenient evasion of the most elementary facts of merchandising economics.

The fact is that price to the consumer is largely an automatic phenomenon—where there are no secret formulae and where the public at large are the eventual purchasers. If free competition exists price will be forced to its minimum level with surprising rapidity. What better selling argument can a competitor have than equal or increased merit at lower price? An excellent example of the functioning of this law can be observed in the case of liver extracts for hypodermic injection. The weight of research devoted to the production of liver extracts that combined painlessness (small dosage), reduced cost and enhanced potency resulted in rapidly overcoming these barriers to its use. Every manufacturer knows that there are a great many more potential customers with ten cents than with a dollar and applies the obvious conclusions to his marketing policies. The psychological sales-barrier of "high price" is a far too familiar obstacle to any medical-contact man or salesman to be ignored. But the very real barrier that exists because shipping, advertising, and plant equipment costs are accelerated out of all proportion by limited sales-fields, has a chastising effect upon the manufacturer who naively assumes that he can set his own rate of profit. Obviously the unit cost must be as low as possible to reach the greatest number of customers. Competition and the low amount of purchasing power in the hands of the public combine to force the manufacturer into adopting the most efficient selling methods and constantly lowering his production costs.

Even where a manufacturer has for a short time a monopoly as a result of introducing a new

discovery he is still subject to the limitations enforced automatically by the amount of purchasing power in the hands of his potential customers over this he has no control. When Parke-Davis and Company first introduced Eschatin, which saved the lives of patients with Addison's disease, the price was 13.00. Shortly, by more efficient methods of production they were able to reduce the price to approximately 8.00. Quite aside from their desire to help humanity, they were well aware that too few patients with Addison's disease had 13.00. They were good business men; and by the same rule when they can produce it more cheaply they will immediately do so. If they don't, so surely as the sun rises, a competitor will.

Professor Henderson assumes, too, that advertising and detailing increases cost to the public. He says: "Proprietary drugs or combinations always have an enhanced price owing to the cost of advertising, detailing physicians and druggists, undue costs of production and profit calculated on these exceptional costs." Surely the most superficial consideration of this statement must exhibit its glib immaturity. Would Professor Henderson seriously ask us to believe that no benefits are derived from the prerogative of consumer's choice. We like the privilege of choosing between Jone's and Smith's beans—and we very much doubt if any other system of distribution than the advertising - proprietary - competitive method would distribute better beans more efficiently at a smaller fraction of the per capita income.

Exactly the same economic rules apply in the selling of beans or any other necessary commodity as apply to the selling of cod-liver oil. Advertising is a very necessary agent to promote consumer demand. Even such a complete monopoly as the British telephone system, operated by the British postoffice authorities, concede the necessity of advertising. Create demand, widen distribution, and the cost to the individual becomes less.

Now that physicists in the laboratories of the General Electric Company have devised short-wave therapy chambers to induce pyrexia are we to assume on the basis of Professor Henderson's reasoning that the cost to the community will be enhanced by that company sending out trained representatives to explain them to physicians? Will it be against the public interest to identify these instruments by manufacturer's name and to advertise them in medical journals? Surely such conclusions apply only if the communist psychology is embraced.

Actually the word "proprietary" used in connection with pharmaceutical products where the formula is not secret merely means that the maker has identified his product by putting his name on it. This is hardly reprehensible. Few doctors indeed would like to use ether or arsenicals or pituitary extracts of unknown origin. To do away with proprietary drugs is comparable to making a physician put on his office door, "Manitoba

Graduate No. 606." Confidence in individuals and in individual firms is frequently a recognition of merit and of integrity.

Of course all professors are not so naive. Here is the opinion of N. Mutch, M.D., F.R.C.P., lecturer in pharmacology at London University, as expressed in the *British Medical Journal* for February 24th, 1934: "Sale under brand name has much to be said in its favour. The quality of even B.P. products sold by large firms under their brand name is often maintained by systematic tests of a far more discriminating nature than those laid down in the *Pharmacopoeia*." Dr. Mutch then lists several examples such as charcoal, medicinal paraffin, ergot, etc.

As to detailing physicians, Dr. Mutch has this to say in the same article: "It is good policy to interview travellers from important drug houses. . . . In this way there can be acquired much useful knowledge which is not imparted in the lecture rooms and wards. The simplicity and reiteration of their statements register in memory and practice more effectively than does logical exposition before learned societies or in scientific journals."

While Professor Henderson resents representatives of leading manufacturers calling upon him, this reaction is, of course, not that of the world's leading practitioners. The writer has spent some years in interviewing physicians of every degree of training and competence. Generally speaking, the men of elaborate qualifications and highly specialized training welcome opportunities to talk with pharmacists representing the reputable manufacturers. In large centres, such as London or Chicago, such interviews are usually arranged by appointment, and the representative carefully limits his discussion to subjects or products that are of special interest to the particular physician.

Saving costs of advertising and detailing leads us, of course, to embracing socialized medicine. We can then contemplate saving the costs of convenient and attractive physician's offices in modern buildings; we shall save the salaries of architects, and engineers and elevator operators. Then, because there is no advertising in them, our daily newspapers will cost us two dollars an issue, and our medical journals will cease to publish; printers and pulp-mill employees won't pay their doctor's bills . . . and so on, ad absurdum.

We shall have saved all of these costs and be on the verge of starvation from lack of customers when the professors will come along and save us by taking over the plants and research laboratories of the pharmaceutical manufacturers and distributing what they think is good for us. That will solve Professor Henderson's other worry, "the undue production costs." (Privately we will let you in on a commercial secret of our own laboratories—Oppenheimer's employ experts to devise ways and means of cutting down production costs so that retail price may be reduced and sales-resistance thus decreased. We have an uncomfortable suspicion that some of our competitors may also have discovered this secret).

So far we have been discussing the commercial and economic effects of the obtaining system without crediting drug manufacturers with ethical or social interests. But drug manufacturers are about comparable in sense of social responsibility or degree of competence to doctors, plumbers, newspaper editors or deepsea divers. In other words they are people who by choice, or the misguided direction of parents, decide that the lore of pharmacy is attractive and that by engaging in this trade they might become useful—and even well-fed—members of the community. Perhaps the urge to become a Toronto professor has its inception in much less earthy things.

Quite aside from it being better business practice to make good drugs than bad, we still believe that the average man would rather do a good job than a bad one if only for the approval of his fellows. We doubt if there is anything particularly distinctive in the chromosomes of pharmaceutical chemists that would distinguish them from men engaged in other skilled crafts.

We are free to admit that charlatans and, what is perhaps worse, ignorant people, invade the pharmaceutical manufacturing business. Their ventures are, fortunately, usually short lived for the economic reasons outlined. And we can be very sure that so long as incompetence or viciousness is a part of human nature people with these vices will invade all businesses. The cure, however, is not destruction of the good things that exist in the present system along with the bad. We *mustn't* kill the patient to de-louse him.

Professor Henderson is apprehensive about the doctor being taken in by the "plausible story" of the detail man. Certainly the professor can't always be with his students to guard them against the pitfalls of the world; but what he can do is give them sufficient training in pharmacology to make mere sophistry ineffectual. Ignorance and saueness cannot impose upon the intelligent and well informed doctor. In fact this writer's experience is that the average medical man is more expert at separating the therapeutic wheat from the chaff than Professor Henderson appears to think.

Since drugs have to be manufactured and since the individual practitioner cannot be physicist, bio-chemist and pharmacologist, let alone quinine and digitalis farmer, it would appear to be more to the point to list the rules to which the manufacturer should abide in the best interests of the community and the medical profession. Perhaps the reader will agree with these ethical rules:

1. He should be well-trained, intelligent and progressive in his particular field.
2. He should conduct research and standardization laboratories.

(The research laboratories of British Drug Houses Ltd. have contributed a great deal to the world's scientific knowledge in connection with their work on Vitamin C (ascorbic acid), acetylcholine and mandelic acid and many other products. The B.P. Committee, in preparing the new B.P., availed themselves of much of this excellent private research.)

3. He should not market secret-formula preparations.
4. He should not invite self-diagnosis or self-treatment on his labels or in his literature.
5. He should employ expert, well-trained representatives to meet the medical profession. No better or more efficient plan of forwarding sales has yet been devised. Printed advertising can only augment, and never replace, personal discussion between qualified pharmacists and physicians in such an individualistic profession as medicine.
6. He should be aggressive in his business methods and consider the factors of availability, palatability, elegance, painlessness and convenience. (These are natural corollaries).
7. He should take precautions that his labels and literature are accurate and free from exaggeration within the limits of the knowledge at the time.
8. He should not manufacture two qualities of drugs but only highest standards within the limits of the knowledge at the time.
9. It is in the professional and community interests that pharmaceutical products be distributed through regular retail pharmacies, and that a reasonable profit be allowed.

We maintain that manufacturers who observe these rules are deserving of the respect and patronage of the medical profession. Most of the major manufacturers deviate slightly or not at all from them; you see, they are also the rules of sound business. Analyse them and you will find that they make for profit as well as social benefit. And, if these rules are observed, cost to the patient will automatically find its own level for the reasons before explained.

On this basis, and no other, is sound business built. Thus reputation is built and businesses prosper. Perhaps you remember Ecclesiastes—the quotation still holds: "Dead flies cause the ointment of the apothecary to send forth a stinking savour; so doth a little folly him that is in reputation for wisdom and honour."

A steady flow of reliable pharmaceuticals is the life-blood of medicine; its source must not be prejudiced at the whim of arm-chair philosophers. What the physician wants when a patient is in labour is a potent pituitary extract, then and there. He looks, too, for the maker's name on it because he knows that the manufacturer by so identifying it has assumed responsibility for his product up to the point where the physician uses it. Professorial wind-mill tilting will supply little pituitary extract.

We have, in this article, mentioned three of our competitors who are "in reputation for wisdom and honour", but we could make a considerable number of additions to any list we hastily devised. For example, we invite the reader to contemplate the excellent work of Messrs. Winthrop in making and distributing consistently reliable Neo-salvarsan; of Squibbs in the production of ether.

It is fair to add that we have not consulted these competitors as to whether or not they desire their names to be included under this heading. There are quite a few more who should be included, Ciba, and Merck, for example. Perhaps these manufacturers would prefer to be credited with different products than those mentioned; credit the omissions and errors to the fact that this article is an individual and personal expression limited by space and knowledge.

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We take this opportunity of thanking our many friends in the Medical Profession for their support during the past year and trust that our service will merit a continuance of that support during the year 1936 and onwards.

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Department of Health and Public Welfare

NEWS ITEMS

PREVENTION OF THE DISASTERS OF LATE SYPHILIS

S. C. PETERSON, M.D. (Man.)

The following is the third and final section of Dr. Peterson's address on "The Reduction of Morbidity in Venereal Diseases", read at the Post Graduate Conference, September, 1934.

"The time after infection at which the diagnosis of syphilis is made and treatment instituted is a matter of major importance. The earlier treatment is begun the better the chance for absolute cure. The delay of a few days may decrease the patient's chance of a favourable outcome by a considerable margin. The diagnosis of the chancre is no longer a clinical but a laboratory problem. There is no longer any object in describing, with the infinity of detail made possible by the observations of four centuries, the appearance of the primary lesion of syphilis.

In Fournier's treatise, 239 closely printed pages without a single illustration, are devoted to familiarizing the physician with the physiognomy of the chancre. If the examiner had no idea whatever what a chancre should look like, the better it would be for the patient and the public at large. There is no way to identify a genital lesion except by the dark field, or by one of the serological tests.

A definite plan is necessary in the proper treatment of early syphilis and it must be followed out in all details. The treatment is by schedule and not by blood tests. The continuous overlapping plan of treatment is probably the method of choice. The short abortive and the so-called intensive methods of treatment can not be too strongly condemned. They are the most potent agents in the production of chronicity. There is no guess work now as to the amount of treatment necessary in early syphilis. An intensive study has been made in several countries of the world by the Health Section of the League of Nations and their recommendations have recently been published.

There are several other factors which are important, in our efforts to prevent chronicity in syphilis. Among these may be mentioned the use of the proper drugs at the proper time. Stress should not only be laid on the importance of relying chiefly on the arsphenamines in early syphilis, but on the inclusion of one of the heavy metals, preferably bismuth, in any plan of treatment. Thirty injections of each of these drugs during the first year of the infection is considered the minimum requirement, together with 20 Bismuths with or without arsenic in the second year.

The complete co-operation of the patient is, of course, essential to the success of our efforts at cure. This co-operation must be secured by frankness on our part. The patient should be informed of the seriousness of his disease, but he should also be assured of ultimate cure with no restrictions on his usual social activities.

Toxic reactions which necessitate suspension of treatment must be avoided. Dermatitis must be guarded against by careful regulation of the doses of both arsenic and bismuth. 1-10th gram of neo-arsphenamine per 25 lbs. weight of patient, given every 5 to 7 days, has been found adequate, with a maximum of .6 grams in the male, and .45 grams in the female. Not more than 2 grams of metallic bismuth should be given in a course. One must bear in mind the possibility of liver danger from arsenic, and the damaging effects of mercury on the kidneys. Nitroid crises are caused almost invariably by too rapid administration of the arsenicals. Two full minutes should be consumed in giving an injection of

neo-arsphenamine. Local discomfort from intramuscular injections may be minimized by careful selection of the form of bismuth used and proper technique in administering it.

In latent syphilis there are no clinical signs or symptoms. The diagnosis is made solely by the blood Wasserman Test. This test should be an essential part of the general examination of every patient at the first consultation. Syphilis is "The Great Imitator" and may be the cause of pathological changes in any organ or tissue of the body. Each patient who enters our public wards or out-patient departments has this test taken as part of his or her routine examination. Is there any valid reason why the patient who pays for private medical services should be deprived of the advantage which this information gives?

Lesions of the bones, joints, skin and mucous membranes are frequently manifestations of the late stage of syphilis.

The presence of a positive blood test or evidence of the disease elsewhere will help to establish the nature of the lesion.

If the routine blood Wasserman reveals the presence of latent or benign late syphilis, routine lumbar puncture will reveal the presence or absence of neuro-involvement.

I must again emphasize the importance of this procedure.

The prognosis in early asymptomatic neuro syphilis is decidedly hopeful—One may obtain complete clinical and serological cure in 90-95% of these cases, with modern methods of treatment. If one waits for clinical evidence of involvement the probability of cure is reduced to around 30% for clinical arrest with only slight hope of serologic cure.

The place to diagnose neurosyphilis is not in the patient but in the test tube. As much can be learned in ten minutes in the laboratory as in ten years of clinical observation.

Cardio vascular syphilis is primarily and predominately a disease of the aorta and the ensuing changes in the heart are, with a few exceptions, secondary to those in the aorta. The process is most insidious. 15 to 20 years usually elapse between infection and the earliest manifestations of involvement. The earliest symptoms may be that of the anginal syndrome, the earliest sign probably a tympanitic accentuation of the second aortic sound. Treatment at this stage will permit the patient a comfortable and prolonged life. If treatment be delayed until the onset of congestive heart failure the limit of life is usually 18 months. The prognosis is so infinitely better when treatment is started during the stage of uncomplicated aortitis, before the development of regurgitation or aneurism, that careful study should be made to diagnose the process in this stage.

Moore, of John Hopkins, lists seven criteriae for the establishment of a diagnosis of uncomplicated syphilitic aortitis. These are in the order of their relative importance:

1. Telerengenographic and fluoroscopic evidence of aortic dilatation.
2. Increased retromanubrial dullness.
3. A history of circulatory embarrassment.
4. A tympanitic, bell-like, Tambour accentuation of the second aortic sound.
5. Progressive cardiac failure.
6. Substernal pain.
7. Paroxysmal dyspnea.

He believes that in any patient with known late syphilis and without evidence of mitral disease (whether or not the blood Wasserman is positive) the

presence of any three of these criteria is strong evidence for the diagnosis of uncomplicated aortitis and that the presence of any two of them renders the diagnosis probable.

I have discussed the reduction of morbidity in venereal disease under two main headings, viz., (1) The lessening of the incidence of infection, and (2) The avoidance of chronicity and the prevention of complications.

Let me conclude by reading a few remarks from a recent address by Dr. John H. Stokes, one of the consultants of the League of Nations:

"'Not light, but rather darkness visible,' the situation which met the eye of Satan as he viewed the newly created domain of Hell from the surface of the sulphurous lake, bore not a few resemblances to that confronting the eye of the syphilologic observer when almost six years ago, the Health Section of the League of Nations called to Geneva five representatives from certain of the principal nations of the world, to consider the Chaos, which the state of knowledge and practice in the treatment of the world's foremost disease problem then suggested. It was conceded at the outset that we had the means, but we did not know why they so obviously accomplished so little in the control, the extinction of syphilis throughout the civilized world. In November of the past year the League of Nations convened, at Zurich, the same group of men for a final session, in which has been formulated the collective results of an international study of the treatment of syphilis of greater scope than perhaps any single study of the disease ever undertaken. While confined of necessity to the earlier stages of syphilis, the statement of principles of treatment recommended by this international study deserve to carry an authority and meet with an acceptance unique for this field of medicine.

The systems of treatment here presented should set the pace wherever the mind thinks and the hand moves, whether in the deserts of Africa, on ships at sea, in city hall basements or in your treatment rooms and mine. Equipped now with our first adequately supported evaluation of method, it is reasonable to believe that we have it in our power without further advance in knowledge, using only the tools at hand, to reduce syphilis to a minor item in the category of disease within a generation."

"Let the physician then look to himself, and now. Let him develop his index of suspiciousness for the disease; let him demand cheap accurate diagnostic aids of his state or community hospital, and then use them. Let the medical school teach with unprecedented thoroughness the medical facts of the fourth cause of death, its treatment, and most of all its prevention. Let the doctors demand central control of their efforts from clinics and experts, and let them not forget the small but essential item that expertness, public or private, in even so lowly a field of esteem as syphilis, must live.

Ignorance of hazards, unpreparedness for complications, pains, pangs, and paresis, is no procedure for keeping the treatment of syphilis in general medical hands. Once he makes up his mind to treat syphilis, let the practising physician spend two or three weeks' vacation or give regular attendance on a state or hospital venereal disease clinic, learning the basic essentials, and let him not leave his sense of humility and his teachableness behind him when he returns home."

"Catalogued seriatim, the facts regarding syphilis now ready for public presentation and emphasis, as I see them, are: the prevalence of the disease, which is the most frequently reported after measles; the fourth among causes of death, with tuberculosis seventh. Drive home the disabilities it causes that are worse than death; the fact that headway is being made all over the world, if not here; the seriousness of small beginnings, the pinhead chancre, the overlooked infection, the unknowing carrier of the disease; that it is no respecter of persons; and the reality of

the prostitute reservoir as the undoubted source of syphilis. Let it be driven home that treatment, not noble ideals and high-sounding talk, controls infectiousness; that an arsenical is a necessity, not a convenience; that blood tests mean least just when you want them to mean most, and to follow the schedule of early treatment. Let it be proclaimed that treatment must be for 18 months to 2 years in early, and not less than one year in late syphilis; that early there must be no rest intervals, no use of blood tests to decide the stop-and-go, treat-and-rest question. Moreover, treatment must be continuous, no rest periods, no lapses; or one-fourth of the outlook for cure is lost. Let the public learn to demand the blood test of every doctor in every medical, surgical, obstetrical and special situation; and in the insurance examinations too, instead of the inexpressibly futile and silly question on every life insurance examiner's blank form: "Have you had a venereal disease?"

Dr. Stokes concludes with the confession, which I should also like to make, that "One always feels a bit of a hypocrite as he finishes a paper like this, in which even the most opinionated and self-satisfied author must admit that he has at many points failed to keep his feet to the ground, and has more than once fallen afoul of a tarring with his own brush."

COMMUNICABLE DISEASES REPORTED

Urban and Rural - November, 1935.

Occurring in the Municipalities of:—

Chickenpox: Total 383—Winnipeg 248, Brandon 51, St. James 16, Kildonan East 11, Neepawa 8, Selkirk 8, Virden 7, Portage Rural 6, St. Vital 5, Flin Flon 4, St. Andrews 3, Unorganized 3, Wallace 3, Teulon 2, Kildonan West 1, Norfolk N. 1, Transcona 1, (Late reported—October—Shellmouth 5).

Mumps: Total 367—Winnipeg 202, Kildonan West 45, St. Boniface 38, St. Vital 28, Unorganized 17, Dauphin Town 8, St. Paul West 7, St. Clements 6, St. James 5, Ethelbert 3, Woodlands 3, Rosser 2, Hamiota Rural 1, The Pas 1, Transcona 1.

Scarlet Fever: Total 180—Winnipeg 78, Brandon 24, Roblin Rural 8, Manitou 5, Roland Rural 5, Wawanesa 5, Flin Flon 4, Pembina 4, Rhineland 4, Gilbert Plains Village 3, Minto 3, Selkirk 3, St. Boniface 3, Transcona 3, Victoria 3, Morden 2, Neepawa 2, Stonewall 2, St. Vital 2, Cameron 1, Ethelbert 1, Glenella 1, Morris Rural 1, Norfolk South 1, St. James 1, St. Paul East 1, The Pas 1, Tuxedo 1, Unorganized 1, Whitehead 1, (Late reported—September—St. Boniface 1, October—Flin Flon 3, St. Boniface 1, The Pas 1).

Whooping Cough: Total 79—Winnipeg 40, Stonewall 9, Unorganized 7, St. Boniface 4, Flin Flon 3, Rosser 3, Shellmouth 3, Brandon 2, The Pas 2, Boulton 1, Fort Garry 1, Hanover 1, Rockwood 1, Whitehead 1, (Late reported—September—Pembina 1).

Measles: Total 55—Souris 14, Strathcona 12, Winnipeg 10, Edward 6, Grandview Rural 3, Brandon 2, Glenwood 2, St. Vital 2, Dauphin Town 1, Shellmouth 1, Stonewall 1, St. Clements 1.

Tuberculosis: Total 36—Winnipeg 11, Portage Rural 3, Springfield 2, Birtle Rural 1, Blanshard 1, Brandon 1, Cornwallis 1, Cypress North 1, Dauphin Rural 1, Hanover 1, Harrison 1, Lorne 1, McCreary 1, Macdonald 1, Montcalm 1, Morton 1, Portage City 1, Rhineland 1, Roblin Rural 1, Sifton 1, The Pas 1, Wallace 1, Winnipeg Beach 1.

Diphtheria: Total 24—Winnipeg 10, Unorganized 5, St. Boniface 3, Rhineland 3, Selkirk 1, Shellmouth 1, (Late reported—September—Unorganized 1).

Typhoid Fever: Total 11—Hanover 3, Brandon 1, Cameron 1, St. Andrews 1, Whitewater 1, Winnipeg 1, (Late reported, September: Pipestone 2; October: Unorganized 1).

Erysipelas: Total 9—Winnipeg 2, St. Boniface 2, Bifrost 1, Killarney Town 1, McCreary 1, Manitou 1, Riverside 1.

German Measles: Total 7—Stonewall 4, Dauphin Town 1, Kildonan East 1, Unorganized 1.

Influenza: Total 6—Winnipeg 2, Gimli Rural 1, (Late reported—September—Morton 1, Norfolk North 1, Westbourne 1).

Puerperal Fever: Total 1—Cartier 1.

Septic Sore Throat: Total 1—Virden 1.

Diphtheria Carrier: Total 1—Tuxedo 1.

DEATHS FROM ALL CAUSES IN MANITOBA For the Month of October, 1935.

URBAN—Cancer 45, Pneumonia 15, Tuberculosis 6, Puerperal 3, Syphilis 2, Influenza 1, Polio encephalitis 1, all others under 1 year 3, all other causes 153, Stillbirths 16. Total 245.

RURAL—Cancer 23, Tuberculosis 21, Pneumonia 14, Influenza 4, Puerperal 3, Syphilis 3, Erysipelas 2, Whooping Cough 2, Typhoid 1, all others under 1 year 5, all other causes 177, Stillbirths 16. Total 271.

INDIAN—Tuberculosis 12, Pneumonia 1, all others under 1 year 1, all other causes 8, Stillbirths 2. Total 24.

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Medical Library University of Manitoba

A summary of the contents of some of the journals available for practitioners, submitted by the Faculty of Medicine of the University of Manitoba. Compiled by T. E. HOLLAND, B.Sc., M.D. (Man.), F.R.C.S. (Edin.).

"The Practitioner"—November, 1935.

This number contains a symposium on Affections of the Ear.

"Recent Work in Otosclerosis" — by Albert A. Gray, M.D., F.R.F.P.S., Middlesex Hospital.

"Acute Suppurative Otitis Media and Mastoiditis"—Some Remarks on Diagnosis & Treatment—by Norman Patterson, M.B., F.R.C.S., London Hospital.

"The Conservative Treatment of Middle-Ear Suppuration"—by F. J. Cleminson, M. Chir., F.R.C.S., Middlesex Hospital.

"Hearing Aids" — by Phyllis T. Tooley Kenridge, M.Sc., Ph.D., M.R.C.S., L.R.C.P.

"Traumatic Injuries to the Knee Joint"—by J. Alexander Mackenzie, M.A., M.B., Ch.M., Colne.

"A System of Treatment of Chronic Rheumatism"—by A. T. Todd, O.B.E., M.B., M.R.C.P., Bristol.

"The Clinical Journal"—November, 1935.

"The Causes and Treatment of Anaemia"—by Charles Seward, M.D., F.R.C.P., Hon. Asst. Phys. Royal Devon and Exeter Hospital.

"The Differential Diagnosis of Pelvic Tumours"—by Alfred Gough, Ch.M., F.R.C.S., F.C.O.G., Hon. Surgeon, Hospital for Women, Leeds.

"Malignant Tumours of Bone"—by Harry Platt, M.S., F.R.C.S., Hon. F.R.C.S., Hon. Orthopaedic Surgeon, Manchester Royal Infirmary.
—This is the concluding article of the paper started in last week's issue of the same Journal.

"On Goitre"—by A. E. Mortimer Woolf, M.B., Ch.B., F.R.C.S. Surgeon to Queen Mary's Hospital for the East End.

"The Management of Cases of Head Injury"—by Lambert Rogers, M.Sc., F.R.C.S., F.R.A.C.S., F.A.C.S. Professor of Surgery, University of Wales.

"The New England Journal of Medicine" —November 14th, 1935.

(Boston Dispensary Varicose Vein Clinics)

"The Treatment of the Varicose Ulcer"—by Edward T. Whitney, M.D., and Peter A. Con-sales, M.D.

"The Treatment of Phlebitis"—by Edward T. Whitney, M.D.

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Clinical Section

Treatment of Pulmonary Sepsis

By

DONALD L. SCOTT, M.D. (Man.)

Physician, Central Tuberculosis Clinic

Winnipeg

Demonstrator in Medicine, University of Manitoba

It is just during the last few years that attention has been paid to the prevention of pulmonary sepsis. Prevention, of course, implies a knowledge of cause, and this is where we fall short. In our opinion, most cases begin in childhood or early adult life and consequently preventive measures should be applied at this age.

PREVENTION

Early care of coughs and "colds" is of prime importance and especially care of the coryzas and bronchial infections accompanying the acute infectious fevers of childhood. Broncho-pneumonias, even of slight degree, are common with measles, scarlet fever, whooping cough, etc. Some children have cough for weeks following apparent recovery from one of these illnesses. The cough, however slight, is an indication that they have not recovered. The simple remedy of keeping these patients quietly in bed until the cough is gone would likely prevent a great deal of misery in later life. It is surprising how a cough will decrease in frequency day by day simply by the application of a little old fashioned rest and quietness.

These infections, however, are not the most important predisposing causes of pulmonary sepsis. In our experience, infections and slight irregularities of the nose and accessory sinuses are by far the most frequent offenders. In many cases, these nasal infections are only exhibited for the first time during an attack of whooping cough, measles, etc., but this is likely purely a coincidence. In children having frequent head "colds" or frequent chest "colds", look to the nose for a source of infection. It will frequently be found. Let us once more make a plea for more rest for these children who suffer from frequent "colds" and also for early and thorough inspection of the nose and accessory sinuses.

Another not rare finding in adults suffering from pulmonary sepsis of almost any degree is bad mouth conditions—caries teeth, spongy septic gums—pus exuding from about the teeth and constantly feeding infection to the bronchial tree. Is it any wonder that we find the organisms of Vincent's Angina in a great number of these cases? While attacking the chest we should start at the same time a parallel attack on the mouth. We have seen cases of multiple lung abscess of the foulest description, the pus just teeming with these spirochetes, and no obvious cause for the abscesses except foul mouth conditions.

TREATMENT—MEDICAL

Both medical and surgical measures are used in the treatment of pulmonary sepsis, medical measures being used first, if possible, in all instances. With early cases, if treatment is persisted in, this should be sufficient. Medical treatment, then, comprises rest in bed to increase weight and general resistance. Quiet rest in bed is very important and cannot be emphasized too much, for, after all, these people are handicapped probably as much as the man with heart disease.

And now to empty out the diseased area of the lung, which, in many cases, is virtually a cess-pool of pus. As is well known, the lower parts of the lung are most commonly affected. In order to empty this out, the lung should be inverted. That means that the whole trunk must be inverted. In this "posturizing", the patient can lie over the end of a table with hands on the floor and actually almost stand on his head. This promotes free drainage of the diseased area. Many patients discover for themselves the most suitable position for drainage. Posturizing is usually done two, three, or four times a day, from five to ten minutes at a time. While the patient is in this position he is encouraged to cough easily without strain. Inhalations are sometimes of value also—just ordinary steam which may be medicated or not, as one desires. This routine must be kept up for variable periods—of course, depending on the pathology present and the length of illness.

In young people, where the chest wall is still fairly pliable, if the trouble is fairly early, this routine is curative, even after a few weeks of treatment. In the old established cases, of course, where sputum is abundant, foul, and has been present for years, cure by this method is hopeless, but it is surprising how comfortable these people can become if they persist in keeping the chest empty and take ordinary proper care of themselves. It is noteworthy that when they are taken care of in an institution they all improve—for the simple reason that there is someone there to remind them to posturize and insist upon rest. A short time after going home they often revert to their former condition just through carelessness on their own part. Naturally, this form of treatment for most people is very tedious and they are hardly to be blamed for forgetting their exercises at times. Of course, another factor in keeping up infection is the frequent occurrence of the common "cold" to which all of us are exposed.

The problem of the patient with bronchiectasis is different. His bronchi are dilated and incapable of returning to normal. The alveolar tissue about the smaller bronchioles is very often diseased also. It is impossible to return this to a normal functioning state.

One should first try the routine outlined above with these unfortunate people, for some of them can become fairly comfortable and able to do their daily work, simply by posturizing and a little general care. This improves the general condition at any rate. With this class postural drainage is needed daily for the rest of their lives. However, it is well known how careless most patients are, and failures are very common.

TREATMENT—SURGICAL

Most surgical measures of curative value entail an extensive operative procedure. For this reason great patience must be exercised with palliative measures before turning to surgery for help. There are, however, certain definite indications for surgery, such as copious foul sputum causing the patient to be a social outcast, haemorrhage, or chronic ill-health due to repeated pneumonias or constitutional changes. On the other hand, radical surgery can only be attempted in cases where disease is unilateral or mostly so. At least, one must have enough good lung left to carry on the normal functions of life. For the patient with advanced bilateral disease the only hope is postural drainage, rest, and diet.

Pneumothorax is still used occasionally but it is of limited value. Pleural adhesions are usual in advanced cases, thus preventing its application. It has been our experience that pneumothorax, even if a good collapse is secured, is of little value in relieving symptoms, the thickened pus sacs which were bronchi refusing to collapse. Reports from other centres are not very encouraging.

Oleothorax, or the filling of the pleural cavity with sterile oil after inducing pneumothorax, has also been tried, but here also the results have been discouraging.

Bronchial aspiration and lavage by use of the Bronchoscope is advocated, but certainly is not curative. We have no experience here with this method. The bronchoscope should be used in all recent cases in children or adults, mainly as a diagnostic procedure to rule out foreign body and new growth. In old cases bronchoscopic drainage keeps the bronchi patent, thus paving the way for free drainage. In early cases cures are recorded. Cures are also reported, however, in early cases simply by posture and rest.

Avulsion of the phrenic nerve to paralyze the diaphragm has been used, but its usefulness is limited. In most centres it has been abandoned as being a dangerous procedure, the elevation of the diaphragm causing purulent secretions to become pent up in the lung and coughing is not so effective. It is still used as a pre or post-operative measure to the removal of a lobe to help to take up space in the thorax.

Thoracoplasty in selected cases seems to be of use. This is done by removing the whole length of the lower ribs and even going as high as the third and fourth. Leaving the first and second prevents collapse of the normal upper portion of the lung. Cures from this measure are infrequent

but most surgeons report improvement, such as great reduction in sputum, gain in weight, etc. Thoracoplasty also serves as a preliminary to other surgical procedures, such as the cautery or removal of a lobe.

Incision and drainage has been recommended but it is obvious that unless the disease is confined to a single bronchus this procedure would simply be a waste of time.

CAUTERY

Graham of St. Louis in 1923 recommended the use of the cautery. This "Cautery Pneumectomy", as it is called, is recommended for unilateral bronchiectasis, in which ordinary measures have failed and in which it is dangerous to remove the lobe surgically.

Briefly this is done by exposing a large enough area of parietal pleura through a reflected flap of chest wall after resection of portions of three or four ribs. One must make sure that the pleural surfaces are adherent. Then in short stages three to four weeks apart the diseased area is opened into with the hot cautery. In this way dilated bronchi are opened and drained, and diseased areas of lung are charred and slough away. When thorough drainage is established the area begins to fill in by granulation. Good results are reported by Graham in his series of 54 cases in 1929. Of this number 36 or 66.6% are still alive and at work, 34 or 63% are definitely improved, the remaining ranging from slight improvement to no change. There were 6 or 11% operative deaths. In Graham's series 17 or 47% of the living patients had small bronchial fistulae persisting but this is better than the bronchiectasis and they are usually not more than a lead pencil in size.

LOBECTOMY

Total surgical removal of the lobe or lung has been advocated by some surgeons for a number of years. Now, with the present refinement of X-ray diagnosis and surgical technique, this is becoming a safer operation. There are many slight differences in technique which are not important here but, briefly, the operation consists in making a large opening in the chest wall in line with the ribs. The lobe is freed of adhesions and, of course, collapses somewhat. Two tourniquets are applied to the root area, proximally and distally, and the lobe removed between them. The distal tourniquet is placed to prevent spilling of purulent sputum into an already irritated pleural cavity. The stump is closed over with sutures and pleura, and the thorax closed with closed drainage in place.

By some surgeons this is done in two stages, in order to fix the mediastinum and remaining lobe by the formation of adhesions following the first stage.

Bronchial fistulae are common here also but as mentioned before they are not as troublesome as the bronchiectasis and can frequently be closed later by grafts.

Bronchiectasis due to foreign body or new growth may be treated in the same way. There are several cases now reported of lobectomy for new growth. Bronchiectasis due to foreign body is obviously going to be well localized and, if conditions are suitable, surgery of some kind is the method of choice.

With tuberculous bronchiectasis the treatment is first that of the tuberculosis. Cavities can later be closed by whatever method seems suitable.

The mortality is steadily lowering, and though it is unfortunately not yet low, surgery offers a fair chance of relief to one with troublesome one-sided bronchiectasis. Since children bear the operation better than adults and since the life-long endurance of bronchiectasis is so miserable a prospect, even with the present mortality every well established fairly unilateral bronchiectasis in a child not improving should at least be considered for surgery.

ABSCESS

The treatment of lung abscess is a very controversial question. It seems to us that many will become cured by rest in bed, and posture. There is no doubt that if the abscess begins and continues to drain through a bronchus it will heal. The bronchoscope is of great use here in keeping the passageway clear for drainage. Here also the value of absolute rest and quiet cannot be over-emphasized. It is just as important as rest for tuberculosis.

These conservative measures should be tried first in all cases. Usually in six to eight weeks one can tell whether cure by conservative measures is possible. If the clinical course is not favorable surgical measures must be considered.

Pneumothorax is of value provided the infection about the abscess is not too near the pleural surface. In these cases the danger of a putrid empyema is great, and it is often fatal. In giving pneumothorax one should go very slowly because of the danger of choking off the internal drainage opening closing the neck of the bottle, and also of causing necrosis of lung tissue already heavily infected.

Incision and external drainage is really just the opposite to bronchial drainage. One must be sure of the location and also be sure there are pleural adhesions over the area where the abscess most nearly approaches the surface. A wide opening must be made and the abscess practically unroofed. Some use the hot cautery for this because it prevents bleeding and they think the incidence of brain abscess is less also.

Many putrid abscesses caused by anaerobic organisms are fatal, the danger being, a spread in the same lung or into the opposite one, causing a gangrenous broncho-pneumonia.

To sum up:

Prevention is better than cure. A little care of troublesome persistent coughs, especially in children and especially after the acute infectious fevers,

by rest in bed will prevent much lifelong misery.

In the treatment of all forms of pulmonary sepsis the building up of general bodily resistance is of great importance. This can be done usually by bodily rest and other measures but cannot be done without rest.

People suffering from pulmonary sepsis are all handicapped people and need to have life adjusted and energy expenditure measured for them as much as heart cases do.

Postural drainage several times a day is of great use in all sepsis of lungs and bronchi, but must be persevered in. It can cure in early cases and alleviate in all.

In bronchiectasis postural drainage is most important. Of lesser importance are pneumothorax, oleothorax, bronchoscopic aspiration, and phrenic avulsion.

In established bronchiectasis surgery should be considered, especially in children. The procedures of greatest value are the cautery and surgical removal of the diseased lobe.

No universal rules are possible for lung abscess, but rest is one of the most important elements in treatment, combined later, if necessary, with well planned surgical measures.

Briefly, in all septic conditions the best cure is prevention, the second best, the building up of resistance by rest and other care, and surgery being used when indicated.

Tuberculosis Epidemiology—Some Postulates

By

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After all, the outstanding fact about tuberculosis is that it is an infectious disease. If there is even slight occasional contact, infection is likely: if contact is close, infection is inevitable: if prolonged, disease will likely follow infection sooner or later: and when disease is once established, then disability, crippling, scattering of infection and death are all in the offing.

Twenty-five years ago we had less to say than we have now about the infectiousness of tuberculosis, simply because we thought of everybody as inevitably infected anyway, and what could we do about so wide a spread? Since the sparks of infection would always fly, the only worthwhile protection was fire-proofed houses. And since the wind that bloweth where it listeth would always scatter evil seeds over the land, our best study was how to make the soil or soil culture resistant to them. Adverse conditions in life and living make a favorable soil for tuberculosis seed,

and favorable conditions of life and living help one who has been seeded with infection to resist the disease. So we sent the sick man to a Sanatorium to be cured by building up resistance to disease, tried to warn people against resistance-lowering ways of living, and to teach cleaner, saner, less wasteful living.

We still send the sick man to the Sanatorium, where we have supplemented resistance-raising routine by a good deal of surgery, and in all these years ways of life and living have gained many wholesomenesses and healthfulnesses, such as open windows and better choices in foods, that even the lean years have not altogether taken away. Soon a surprising thing began to dawn upon us. We had thought of infection as like fate itself, something we could do little or nothing about. But so many sick people have been segregated, and so many suspects and contacts examined, that we found infection was becoming noticeably less. Communities were becoming cleaner and safer. Deaths were fewer. Many children grew up without infection. Tuberculin tests showed fewer and fewer reactors.

Now when something was being done to control seed scattering, it was certainly a most important matter to push this as far as possible. A man infected some time in the past, and who became ill last year, is a tragedy that has happened. It has to be dealt with deliberately by the comparatively slow processes of cure. But a little family circle now, today, in contact with open disease and sure to be infected sooner or later is a tragedy like a child fallen into the water and about to drown. It is just happening. In another minute it will have happened. Something must be done this very second to prevent tragedy. Anti-tuberculosis effort must have not only the slower processes of cure, but also the swift processes of prevention and rescue.

Here is a sick man. The first question is, has he got tuberculosis? That is diagnosis. The second is, what can we do for him? That is treatment. The third, will he be helped or cured? That is prognosis. The next questions are, where did he get it? and, where did he scatter it? These are questions of epidemiology. And then, what can we do to prevent infection, and forestall disease, in the circle this man came out of? That is Public Health.

One prime essential is to cover the field, to follow up every clue with examinations and re-examinations, to bookkeep carefully year by year records of all known sources of infection and all people possibly infected. To find tuberculosis early there is one way only and that is to hunt for it among people who are not yet ill, but who have been in contact with open disease. If tuberculosis is left to bring itself to the doctor it will come late almost always, dead ripe, and after scattering much infection.

A Sanatorium considers that it exists to cure sick men; but it actually helps the state most by segregating sick men, by getting the spreader

away from the home circle. So those with the worst disease should be given preference, and even those who are pretty much hopeless accepted for treatment.

In most countries, provinces, states and communities, tuberculosis deaths and illnesses are getting fewer all the time. Deaths, and cures, and half-cures are things we can count, but it is not so easy to put into statistics the cleaning up of community infection, and the increase in general safety from tuberculosis menace. But that this clearing up, and this increase in safety, are going on remarkably and increasingly there is no doubt, and it is the most significant fact of the campaign.

When anti-tuberculosis effort began, say twenty-five years ago, fully half our present populations were already well started in life, and some of them beyond middle-age. They had been born into the more gross tuberculosis infections of that day, and grown up with them. But in this past quarter century immense amounts of infection have been cleared up at their sources. For even the older people this has meant a better understanding and care of the ills and crippling they had dragged with them out of the past half century. It has meant a cleaner and more wholesome world to live in, grow old in, and die in. But for the children, the budding flowers that make their own spring-time wherever their glad faces appear, for the children of the new day it has meant much more than it could possibly mean for the still-lingering people of the old day. It has meant first of all a cleaner world to be born into; then a safer world to play in and grow up in, a cleaner, safer world to work and wed and have children in. Year by year we see the old surviving population we can do least for going, and the little people we can do most for coming and growing with the sunrise to dominate the day.

Thus year by year, in the very flow of the generations what is old passes away, and all things become new. And if we can do even a little to shape new worlds for new generations, what could an Angel Gabriel ask more? To heal a sick man of the generation before last is something. To keep him from spreading infection is much. But to make the world a cleaner birth-place for the children of yesterday, today and tomorrow is best and biggest of all.

And that is what anti-tuberculosis effort is doing, and doing increasingly. If a community has cut its death from tuberculosis to one-third what they were a generation or two ago then the average population, older and younger, is three times as safe from the tragedies of tuberculosis. But what safety is relatively less for the older elements and relatively greater for the younger elements. Applied to children born today it means a world not three times as safe from tuberculosis menace, but at least six times as safe. If a community has cut its deaths to one-fifth of what they were a generation or two ago, then this community is not five times as safe from tuberculosis menace for children born today, but at least ten times as safe.

Statistics are slippery, and all sorts of adjustments have to be made. Having made all I know how to make, I consider that among the people of white race in this province, when all considerations are in, tuberculosis deaths, in the twenty-five years since 1909, have been cut to one-fifth what they were. And for a child born today I think the tuberculosis menace is much less than one-fifth—is indeed about one-tenth of the tuberculosis menace to children born a quarter century ago. If that is not a worth-while change in community affairs I do not know what would be considered to be one.

OBITUARY

Dr. J. T. Wright died of heart disease in Winnipeg on January 6th, in his 60th year. He was born at Metcalfe, Ontario, son of Rural Dean Wm. Wright and nephew of Archbishop de Penier, Vancouver. He graduated in medicine from Queen's University in 1900 and practiced in Manitou, Man., from 1904 till 1911 when he was appointed to the charge of the Government Hospital on Queen Charlotte Islands, B.C. In 1916 he went overseas as Medical Officer of the 184th Winnipeg Battalion and in France was attached to railway troops. On returning to Winnipeg he was appointed to the Pensions Board and was examining officer at Deer Lodge Military Hospital.

He is survived by a widow, two sisters and two brothers. He was a man of genial disposition and sterling integrity and possessed the confidence of his patients in a marked degree.

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